

REMARKS

This Amendment is in response to the Office Action dated January 21, 2010. Applicant respectfully requests reconsideration and allowance of all pending claims in view of the above-amendments and the following remarks.

I. CLAIM OBJECTIONS

Claims 1, 3-10 and 12 were objected to as not defining the limitation "N".

Independent claims 1, 9, and 12 have been amended to specify that the ratio N/N_t (or $N/2$ for claim 12) is an integer.

Indeed, it is inherent that a matrix has an integer size. Moreover, the sub-matrices are obtained by subdivision of a square matrix sized (N,N) . See the specification on page 4: *"The different matrices sized $(N/N_t) \times N$ are obtained from a main matrix sized $N \times N$ that is subdivided into N_t different matrices"*.

Therefore, it is inherent that the ratio N/N_t is an integer, i.e., that the number of rows of a sub-matrix is an integer (as the $N \times N$ main matrix is, and can only be, divided an integer number of times), as would be understood by a person of ordinary skill in the art. For at least these reasons, the fact that N/N_t is an integer is believed not to introduce new matter to the application.

With these amendments, Applicant respectfully requests that the claim objections be withdrawn.

II. CLAIM REJECTIONS – 35 USC § 101

Claims 1, 3-10 and 12 were rejected under 35 U.S.C. §101 as allegedly not falling within one of the four statutory categories of invention.

The Examiner asserts, "Although the step of "transmitting/receiving a signal" inherently requires a transmitter/receiver to transmit/receive the signal, the transmitting/receiving step is not central to the purpose of the method invented by the applicant and is insignificant extra-solution activity."

Applicant respectfully disagrees.

A. Independent Claims 1, 9 and 12 Satisfy the Machine-Or-Transformation Test

The Court of Appeals for the federal Circuit recently The court's opinion clarified the standards applicable in determining whether a claimed method constitutes a statutory "process" under § 101. See *In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Fed. Cir. 2008). As clarified in *Bilski*, the test for a method claim is whether the claimed method is:

- (1) tied to a particular machine or apparatus, *or*
- (2) transforms a particular article to a different state or thing.

This is called the "**machine-or-transformation test**".

A corollary to this test is that insignificant extra-solution activity will not transform an unpatentable principle into a patentable process. This means reciting a specific machine or a particular transformation of a specific article in an insignificant step, such a data gathering or outputting, is not sufficient to pass the test.

Applicant believes the present rejection is based on a misapplication of this corollary.

In Applicant's claim 1, the transmit antennas, and in particular the physical number (Nt) of transmit antennas is interwoven in a significant manner into every step of the claim.

The existence and number of transmit antennas (Nt) are tied to the following elements of claim 1:

1. the number of Nt sub-vectors into which the vector is divided;
2. the size (N/Nt,N) of the distinct submatrix with which each of the Nt sub-vectors is multiplied;
3. the fact that each sub-matrix is associated with one of the transmit antennas; and
4. the fact that the Nt sub-vectors (resulting from the multiplying step) are sent from the Nt transmit antennas.

Thus, each step of independent claim 1 is tied to a particular machine or apparatus (i.e., the Nt transmit antennas) in a significant manner, not merely by an insignificant step representing insignificant extra-solution activity. Claim 1 therefore satisfies the machine-transformation test of subject matter patentability stated by *In re Bilski*. Similar arguments can be applied to

independent claims 9 and 12.

B. Further Amendments

Even further, independent claims 1, 9, and 12 have also been amended to state that the different steps are done by a system, wherein a system can be a sending apparatus and/or a receiving apparatus, for example. These amendments further tie the steps of the independent claims to a specific machine or apparatus.

Accordingly, Applicant requests that the claim rejections under 35 U.S.C. §101 be withdrawn.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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